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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,580	11/21/2003	Frederic Beseme	105045.01	3397

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EXAMINER	
MARVICH, MARIA	
ART UNIT	PAPER NUMBER
1633	
MAIL DATE	DELIVERY MODE
09/09/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/717,580	BESEME ET AL.	
	Examiner	Art Unit	
	MARIA B. MARVICH	1633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *6/4/09*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,41 and 42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 2, 41 and 42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/446,024.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 1, 2, 41 and 42 are pending in this application. This office action is in response to an amendment filed 6/2/09.

Deleted: , 2, 5, 6, 10, 20-23, 30, 36, 39 and 40

Deleted: 11/10/08

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

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Claims 1, 2, 41 and 42 stand rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific or and substantial asserted utility or a well-established utility. This rejection is maintained for reasons of record in the office action mailed 11/10/08.

Claim 1 is drawn to a retroviral RNA molecule in isolated or purified state that is obtainable from tissue, comprising the RNA complement of SEQ ID NO:11. SEQ ID NO:11 is a DNA isolated from human tissue that applicants propose is a member of human endogenous retroviruses. Claim 2 is drawn to an RNA molecule in isolated or purified state, that is obtainable from tissue, comprising a nucleotide sequence comprising the RNA complement of a functional part of SEQ ID NO:11 that encodes at least one *env* retroviral protein such as SEQ IDNO:33-35. Finally, claim 42 is drawn to a probe or primer consisting of a sequence selected from the group consisting of SEQ ID NO:s 16-28. Applicants have screened a cDNA library using a Ppol-MSRV probe (SEQ ID NO:29) and detected overlapping clones thus arriving at a reconstructed putative genomic RNA from smaller clones detected, SEQ IDNO:11. The reconstructed RNA sequence is deduced from the alignment of overlapping clones and encodes a

series of retroviral like structures, R-U5-gag-pol-env-U3-R, and the sequences are found on multiple chromosomes (see paragraph 0002). Applicants have called this sequence HERV-W. The reconstructed sequence is integrally contained in clone RG083M05, which comprises two discontinuous regions that are 96% similar to the reconstructed genome. Biologically, applicants teach that HERV-W (1) potential association with pathologies due to its restricted expression in placenta i.e. potential expression from LTRs of operably linked genes (2) potential fusogenic role of the envelope proteins wherein the fetus could be protected from maternal immune systems (3) potential protection by the envelope protein against exogenous retroviral infection (4) impairment of local cellular immunity by a potential immunostimulatory signal carried by the envelope.

SEQ ID NO:11 has been identified by applicants, applicants have determined that this sequence is a member of the HERV-w family of endogenous retroviruses. However, neither the art nor the specification support a utility for SEQ ID NO:11 at the time of filing. As set forth below in greater detail,

For "specific utility", the invention must have a utility specific to the subject matter claimed in contrast with a general utility that would be applicable to the broad class of the invention. According to 35 U.S.C. 101, a specific utility is not a list of potential applications for which the broad class of the invention would also have utility. To be specific, the application must teach the skilled artisan in specific terms specific biological activities of the retroviral RNA molecule, and reasonably correlate that activity to a disease condition. The instant specification is limited to conjecture as to potential disorders that HERV-w might be associated. The specification suggests that the sequence can be a molecular marker for an autoimmune disorder,

or a molecular marker for a pathology that is associated with a pathological pregnancy, or a chromosomal marker for susceptibility to an autoimmune disease. Further, applicants disclose that a nucleotide fragment would be useful as a diagnostic composition, such as in diagnostic hybridization techniques (see paragraph 0078). Specifically, the specification discloses that the HERV-W is expressed in placenta, but merely speculates about the function in placenta and suggest that expression of the HERV-W in the placenta may be under the control of isolated LTR and may result in pathology from aberrant expression. Applicants speculate on a fusogenic role at the level of cellular subtypes in the placenta, an immunosuppressive role and a protective role (see paragraph 0008-0010). There is no description of how the structure of the putative genomic RNA sequence identified as SEQ ID NO:11 relates to the proposed functions. Beyond expression in the placenta, and identity to genes potentially encoding retroviral env, pol and gag sequences, the specification has not described characteristics or specific regions of SEQ ID NO:11 that would provide a correlation between structure and function. It is not clear, whether HERV-W expression is detectable or where HERV-W elements are expressed or if wild-type HERV-w is to be associated with the disorder or if there are unidentified mutant versions of HERV-w that can be associated with disease. Most specifically, it is noted that HERV-w is a family of retroviral elements. Nonetheless such ability to distinguish between pathological states and normal, healthy states would require an identification of what distinctions exists in HERV-w in each state. None such criteria or direction or guidance is provided in the art or specification. Even should a function for the family be demonstrated, it is not clear that SEQ ID NO:11 will share that function. Hence, applicants do not provide a specific utility for HERV-W.

"Substantial utility" defines a "real world" use. Utilities that require or constitute carrying out further research to identify or reasonably confirm a "real world" context of use are not substantial utilities. The instant claims propose functions for HERV-W that would require basic research such as studying the properties of the claimed product itself or the mechanisms in which the material is involved. The substantial use of HERV-W must be assessed at the time of filing. At that time, the molecular, physiological and biochemical characterization of HERV-W was lacking. Song-An et al teach in post filing art (2001) the first HERV-w *env* gene demonstrated to encode the functional properties of a retrovirus envelope glycoprotein (see abstract). However, HERV-w env is expressed from HIV but is not expressed from the HERV-W sequence. It is not clear that HERV-w elements are expressible at this date. As well, Song-An teach that whether HERVs can assemble into infectious virions even with transcomplementation with virion proteins from other HERVs is unknown (see page 3488, col 2, ¶2). Hence, here several years post-filing, the art teaches that HERV-w is difficult to characterize. In 2007, data was presented that suggested that HERV-W elements might be expressed but still to date whether the elements or HERV-W are potential causative agents of various disease was still required. And in 2008, the link between HERV and disease is no closer to being known as Dolei et al teach that "At present, it is unclear whether the detection of MSRV/HERV-W/syncytin expression simply represents an epiphenomenon (e.g., the abnormal expression of endogenous HERV-W or an unrelated coinfection) or whether it might play some part in pathogenesis (Dolei, 2006; Perron and Seigneurin, 1999). In a domain where many questions still remain unanswered, there is experimental evidence linking the presence and regulation of MSRV (the first HERV-W

element detected and purified as retroviral particles carrying RT and the corresponding HERV-W RNA, in LTR, gag, pol, and env regions) with MS features. Indeed, we are only beginning to understand a yet poorly explored domain in human biology, that of endogenous retroviruses." Again this does not indicate whether SEQ ID NO:11 shares these potential correlations as unraveling the role of a family member does not ensure that all members will perform the same function. Hence, it is clear that applying the instant asserted utilities to a real-world problem requires that some specific useful feature of the nucleic acid molecule is known.

Finally, the invention lacks "well-established utility" in that the disclosure provides no specific teaching of the functional properties of the claimed nucleic acid or its encoded protein. While the specification asserts that the claimed sequence has potential role in the development of autoimmune disease such as multiple sclerosis and rheumatoid arthritis, in unsuccessful pregnancy or pathological conditions of pregnancy, there is a lack of evidence presented to indicate any association of the sequence to such pathologies. In 2000, Gaudin et al teach that despite proposals that based upon HIV and HTLVs correlations with rheumatoid arthritis, HERV-w shows no such association. Hence, applicants' assertions lack well established utility. Furthermore, while applicants' claim an RNA molecule comprising a nucleotide sequence comprising the complement of at least an envelope protein, applicants mean SEQ IDNO:33-35. However, applicants have not demonstrated that these are envelope proteins or that these sequences can be expressed. A review of known HERV-w family envelope protein members demonstrates that none of SEQ ID NO:33-35 share any homology with known proteins (see figure 2, Kim et al). Hence, applicants' claims lack well-established utility. It is noted that if the molecule lacks utility the need or use of probes or primers are equally void of utility.

Comment [S1]: see S2.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 2, 41 and 42 are also rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well-established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention, and for the additional reasons set forth below. This rejection is maintained for reasons of record in the office action mailed 11/10/08.

The test of enablement is whether one skilled in the art could make and use the claimed invention from the disclosures in the patent coupled with information known in the art without undue experimentation (*United States v. Telectronics, Inc.*, 8 USPQ2d 1217 (Fed. Cir. 1988)). Whether undue experimentation is required is not based on a single factor but is rather a conclusion reached by weighing many factors (See *Ex parte Forman*, 230 USPQ 546 (Bd. Pat. App. & Inter, 1986) and In *re Wands*, 8USPQ2d 1400 (Fed. Cir. 1988); these factors include the following:

SEQ ID NO:11 is the DNA complement of RNA that is a member of human endogenous retroviruses. The instant claims are drawn to a retroviral RNA molecule that is the complement of SEQ ID NO:11 and as part of a diagnostic composition. The specification discloses that SEQ

ID NO:I 1 is a reconstructed putative genomic RNA from smaller clones detected by screening a cDNA library with Ppol- MSRV probes (see Figure 1). SEQ ID NO:11 encodes a structure of R-U5-gag-pol-env-U3-R, which is found on multiple chromosomes (see paragraph 0002). Applicants have aligned the reconstructed sequence with the genomic clone and found that it exhibits 96% similarity with two discontinuous regions of genomic clone RG083M05 where it is integrally. From this alignment, the Applicants have deduced an LTR sequence and identified elements characteristic of retroviruses. Applicants have called this sequence HERV-W.

HERV-W is a family of retrovirus of which MSRV was the first member identified. Applicants propose use of SEQ ID NO:11 as a diagnosis of states of pathological pregnancy or of unsuccessful pregnancy and of autoimmune disease such as multiple sclerosis or rheumatoid arthritis. The proposed use of SEQ ID NO:11 have no specific and substantial and well - established utility. For example, while applicants propose use of SEQ IDNO:11 there is no indication to date more then a decade past filing of the application that HERV-w is known to correlate to any diseases. In fact, despite being initially linked to rheumatoid arthritis there is no indication that such a link exists (see Gaudin et al). Yet, the function of SEQ ID NO:11 has not been established therefore this is not a substantial real world utility because it would require additional experimentation to reasonably confirm. Utilities that require or constitute carrying out further research to identify or reasonably confirm a "real world" context of use are not substantial utilities. The instant claims propose a function for the SEQ ID NO:11 that would require basic research such as studying the properties of the claimed product itself or the mechanisms in which the material is involved. Beyond expression in the placenta, and identity to genes potentially encoding retroviral env, pol and gag sequences, the specification has not described

characteristics or specific regions of SEQ ID NO:11 that would provide a correlation between structure and function. It is not clear, whether HERV-W expression is detectable or where HERV-W elements are expressed or if wild-type HERV-w is to be associated with the disorder or if there are unidentified mutant versions of HERV-w that can be associated with disease. Most specifically, it is noted that HERV-w is a family of retroviral elements. Finally, applicants have neither established a role for HERV-w or SEQ ID NO:11 in disease state nor have applicants' demonstrated that the sequences of SEQ ID NO:11 such as env, gag or pol are actually expressed. It is not clear that SEQ ID NO:11 is anything more then dead genomic DNA. Applying these asserted utilities to a real-world problem requires that some specific useful feature of the nucleic acid molecule is known.

Secondly, it is noted that the claims recite that the RNA molecule is obtainable from tissue. However, evidence only exists that the DNA is obtainable from tissue.

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Response to Argument

Applicants' arguments filed 6/4/09 have been fully considered but they are not persuasive for the following reasons. Applicants have identified a molecule, called HERV-w that is said to belong to the family of type I endogenous retroviruses. Applicants assert that HERV-w can be used 1) to detect, predict, treat and monitor any autoimmune disease and the pathologies which are associated with it and in cases of pathological pregnancy or unsuccessful pregnancy and 2) to serve as a marker for autoimmune disease or for pregnancy disorders. However, the asserted utility is not substantial as there is no disclosed real world utility associated with the claimed protein. Further experimentation is necessary to attribute a utility to the claimed sequence. See

Brenner v. Manson, 383 U.S. 519, 535-36, 148 USPQ 689, 696 (1996) which teaches that "a patent is not a hunting license. It is not a reward for the search but compensation for its successful conclusion." Assertions that HERV-w can be used to treat *an autoimmune disease or pathological pregnancy* are directed at generic and thus unspecified conditions with an uncharacterized molecule and as such requires further research to identify and confirm a "real world" context of use. The specification as filed does not disclose or provide any evidence that points to an activity for HERV-W or any proteins that might by expressed from the sequences. The state of the art of HERV-w is presented above. In sum (see Yi et al, page 1203, col 2), HERV-w particles were first isolated in 1997 from patients with multiple sclerosis and was subsequently identified in the art by overlapping PCR in 1999. This presents a post filing advancement. The envelope protein was found to be expressed preferentially in foetal tissue and placenta. Hence, at the time of filing, it is clear that HERV-w was only partially characterized based upon sequence comparison with other known HERVs which later was determined to be incomplete and not accurate. The partial characterization lead to some proposals of function (see the specification on page 2-3, emphasis added to demonstrate the theoretical nature of the utility).

The expression of HERV-W restricted to the placenta and the long reading frame potentially encoding a retroviral envelope make it possible to propose physiological biological functions whose impairment could be associated with pathologies.

The expression restricted to the placenta suggests that the expression of retroviral and/or nonretroviral genes under the control of the LTRs may be hormone-dependent. These genes may be adjacent, or under the control of isolated LTRs. A pathology may then result from an aberrant expression following the reactivation of a silent LTR by various factors: viral infection (for example by a member of the Herpesvirus family) or local immune activation. A polymorphism at the level of the LTRs could also prevent these events.

The envelope of HERV-W could play a fusogenic role, in particular at the level of cellular subtypes of the placenta. An immunosuppressive peptide of this envelope could protect the fetus against attack by the maternal immune system. Finally, by a mechanism of saturation of receptors, the envelope of HERV-W could play a protective role against exogenous retroviral

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interferon. The impairment of local cellular immunity may result from an immunostimulatory signal carried by the envelope. This effect may be linked to a protein carrying a superantigen activity, or to the immuno- suppressive region which would become immunostimulatory following either a polymorphism of a dose-effect (overexpression).

Verification of these implications and understanding of the consequences linked to an impairment of the biological functions of the endogenous LTRs or the retroviral envelope may lead to the establishment of methods of diagnosis or of monitoring

- of stages of pathological pregnancy or of unsuccessful pregnancy,
- of autoimmune diseases such as multiple sclerosis or rheumatoid arthritis.

In accordance with the present invention, there has been discovered, in the endogenous state, a new nucleic material, stated explicitly and described below, having the organization of a retrovirus, and capable of being correlated with an autoimmune disease or a pathology which is associated with it, with a pathological pregnancy or an unsuccessful pregnancy.

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In applicants' arguments, they present post-filing art to demonstrate a utility for HERV-w. However, the teachings of the provided documents are not commensurate in scope with the teachings of the specification. For example, the cited references teach, 1) that syncytin is a protein expressed by HERV-w and it is associated with an impaired cytotrophoblast cell-cell fusion in patients with placental dysfunction (Langbein et al, 2007). 2) Antony et al, 2004, Antony et al teach that HERV-w env (syncytium) is selectively upregulated in patients with multiple sclerosis whereas other HERV env mRNAs are not, which suggests that use of the relationship of SEQ ID NO:11 to other HERVs cannot be used to demonstrate function. At this time, Antony et al state that "an explicit function for syncytin is unknown in the brain in contrast to the placenta, where it seems to be important for placental development 18-21". However, references 18-21 are post-filing. 3) By 2007, Antony et al teach that syncytium causes neuroinflammation, neurodegeneration and endoplasmic reticulum stress responses and establish some mechanisms by which this protein functions. However, these all represent research that was conducted post-filing as neither the sequence nor the function of syncytium was known at the time of filing.

Furthermore, the teachings are not commensurate in scope with the specification as the specification does not envision nor propose a function or use of the envelope protein in particular. The specification teaches,

> the objective and experimental data make it possible to link retrovirus and autoimmune diseases and retrovirus and pregnancy disorders.
> (1) common mechanisms are used in the retro- viral pathologies and in autoimmune diseases (presence of autoantibodies, of immune complexes, cellular infiltration of certain tissues, neurological disorders).
> (2) pathological disorders comparable to certain autoimmune diseases appear during infections with HIV and HTLV retroviruses (SiSiogren syndrome, disseminated lupus erythematosus, rheumatoid arthritis and the like).
> (3) a reverse transcriptase activity was detected and retroviral-type particles were observed in the cell culture supernatants of patients suffering from multiple sclerosis (Perron et al., Res. Virol.) 1989; 140: 551-561/Lancet 1991; 337: 862-863/Res. Virol. 1992; 143: 337-350) or from rheumatoid arthritis.
> (4) autoimmune or chronic inflammatory animal pathologies are linked to endogenous retroviruses; some of them are used as animal models of human diseases (insulin-dependent diabetes, disseminated lupus erythematosus).
> (5) significant levels of endogenous anti- retrovirus antibodies have been described in the context of autoimmune, systemic or inflammatory diseases; other data of this nature were communicated by several authors at the IVth European meeting on endogenous retroviruses (Uppsala, October 1996). According to Venables (communiques of the IVth European meeting on endogenous retroviruses, Uppsala, October 1996), a significantly high level of anti- HERV-H antibodies are found during pregnancy but also in the context of various autoimmune disorders such as Sjogren syndrome, disseminated lupus erythematosus or rheumatoid arthritis, without, however, any proof of its direct involvement being provided up until now.
> The involvement of the retroviruses in the autoimmune phenomenon remains compatible with the multifactorial character of the autoimmune, systemic or inflammatory diseases which confront genetic, hormonal, environmental and infectious factors.

Ultimately, applicants' proposal of function is based upon the relationship of HERV-w to known endogenous retroviral sequences available at the time of filing. However, 1) syncytium was not identified or known till after the filing date of the publication 2) the relationship of HERV envelope proteins shows that there is little relationship between syncytium and other HERV env proteins (see Antony et al, page 1089) and 3) HERV biology was a low art at the time of filing. Unronvitz et al (published in 1996 as a review of the literature prior to the isolation of HERV-w

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and provided in the 892 mailed 8/30/07) teaches that HERV biology was a low art with no real indication of biological function of the individual members.

> Venables and Brookes have thoughtfully considered (191) how proving an etiologic association between HERVs and any one of these clinical entities is rather a daunting task. The proof involves showing that a specific HERV gene product elicits autoimmune lesions in a given target tissue or cell type while excluding already known autoimmune antigens such as the ribonucleoprotein autoantigens (Ro/SSA and La/SSB), topoisomerase I, the Ki antigen, and the like. A further complication results from the common finding, discussed above, that human sera often contain antibodies to highly conserved retrovirus interspecies antigens.

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Hence, the ability to use HERV as a treatment, to monitor or detect a disease was not possible based upon a potential correlation with HERV as at the time of filing as the etiological role of HERV was unknown. Furthermore, the ability to use HERV-w as a marker of a non-specified disease is still not possible.

> Dolei et al teach that use of HERV as marker even 9 years post filing is not possible. In MS, a demanding task is to predict individual clinical course and therapy outcome; so far, no suitable (bio)marker has been established, although reliable clinical predictors are crucial for identifying appropriate candidates for early or aggressive therapies, or for therapeutic monitoring (Bergamaschi 2007; Manneli et al 2008).
>
> At present, it is unclear whether the detection of MSRV/HERV-W/syncytin expression simply represents an epiphenomenon (e.g., the abnormal expression of endogenous HERV-W or an unrelated coinfection) or whether it might play some part in pathogenesis (Dolei, 2006; Perron and Seigneurin, 1999). In a domain where many questions still remain unanswered, there is experimental evidence linking the presence and regulation of MSRV (the first HERV-W element detected and purified as retroviral particles carrying RT and the corresponding HERV-W RNA, in LTR, gag, pol, and env regions) with MS features. Indeed, we are only beginning to understand a yet poorly explored domain in human biology, that of endogenous retroviruses. "Classical exogenous viruses, bacteria, and parasites have been widely studied during the past century, thus elucidating many causes of diseases, among which "infectious" diseases predominate. At the dawn of the present century, we seem to have approached yet unraveled complex biological entities, which are pointing to new concepts in virology, genetics, and human physiopathology. This gives hope of a novel avenue for elucidating the multiparametric causes and intricate pathogenic mechanisms of complex diseases, such as MS and schizophrenia.

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Applicants' arguments point to the role of syncytium in the uses of HERV-w. There is no art of record nor disclosure that discloses or provides evidence that point to the proposed activity for the potentially encoded proteins. Post-filing art suggests that the function of syncytium is not

what was proposed nor is the relationship between syncytium and other HERVs such that the function could have been known. Without knowing the function, one cannot know how to use the protein or sequences or what to use as an indicator of disease i.e. an increase or decrease of what protein. A well established utility is not a list of potential applications for which the broad class of the invention would have utility. To be specific, the application must teach the skilled artisan in specific terms specific biological activities of the retroviral RNA molecule, and reasonably correlate that activity to a disease condition.

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Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARIA B. MARVICH whose telephone number is (571)272-0774. The examiner can normally be reached on M-F (7:00-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Woitach, PhD can be reached on (571)-272-0739. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Maria B Marvich, PhD
Primary Examiner
Art Unit 1633

/Maria B Marvich/
Examiner, Art Unit 1633